Participant List 27821 Biofilm Techniques for Food Research

Anette Wold Åsli
Anette.wold.asli@nofima.no
Nofima
c/o Anette Wold Åsli
Post box 210
NO-1431 ÅS
Norway

I have a bachelor in biotechnology. I have been working several years as a laboratory engineer within veterinary, medical and food microbiology. In recent years I have been using various biofilm techniques and lately started to learn more about microscopy.
We have several projects at Nofima with research activities within biofilm area, and it is important to our further work that we learn more about this topic.

Title of presentation:
"Biofilm research at Nofima – Some examples

Camilla Sekse
camillasekse@hotmail.com
Norwegian Veterinary Institute
Section for bacteriology – fish and animals
P.O.Box 750 Sentrum
N-0106 Oslo
Norway

I'm working as a scientist at the National Veterinary Institute (NVI). I've been working with pathogenic *E. coli* for the last ten years, mostly related to virulence. In an ongoing project I have also been involved in a biofilm study where we looked at transduction of Shiga toxin-encoding bacteriophages in biofilm. This year we will start a new project where the main focus is pathogens related to the food chain, focusing on food borne pathogens as *Listeria monocytogenes* and Shiga toxin-producing *E. coli*. In this project we will study biofilm in different food vehicles during food processing and in production environment. We will also look closer and more detailed into dissemination of Shiga toxin genes by transduction inside the biofilm as a follow-up to our already published transduction study.
I want to participate in this course because I'm going to work with biofilm and biofilm techniques the next years. Biofilm studies are of importance since this is a

natural environment for the bacteria to live. More knowledge about this topic and hands-on laboratory techniques will be of great importance when I continue to work in this field in our new project.

Title of presentation:
Biofilm - an environment for dissemination of *stx* genes by transduction.

Hana Turonova
hanka.turonova@gmail.com
Institute of Chemical Technology Prague
Technicka 5
166 28 Prague - Dejvice
Czech Republic

I am in the second year of the PhD program “Microbiology” at the Institute of Chemical Technology in Prague, Czech Republic. I am also in my second year of the PhD program “Food Safety and Microbiology” at ONIRIS in Nantes, France. My work is focused mainly on biofilm formation of the food-borne pathogen *Campylobacter jejuni*. I applied for this course in order to improve my skill of using confocal laser scanning microscopy in biofilm formation studies. Furthermore, I would like to learn more about data processing and statistical analysis of data.

Title of presentation:
Characterization of *Campylobacter jejuni* biofilm formation using confocal laser scanning microscopy

Henriette Lyng Røder
h.lyng.roeder@gmail.com
University of Copenhagen
Department of Biology
Section of Microbiology
Universitetsparken 15, bygning 1
2100 Copenhagen Ø
Denmark

I have only recently received my Masters degree in biology with special focus on microbiology and started my PhD before the summer.
The work I am going to do during my PhD will be to examine multispecies biofilm with focus on interactions during the formation process. This work will also focus on microbial biofilm from food environments.
This is also why I have chosen to take this course as I hope it will improve my

knowledge and skills on how to handle biofilms and analyze the data.

Title of presentation:
Interactions in multispecies biofilm from a food environment

Irene Castro
icastro@cebas.csic.es
CEBAS - CSIC
Food Science and Technology
Campus de Espinardo, 25
30100 Murcia
Spain

In 2003 I started my degree in Biology at the University of Murcia (Spain) and I obtained the Biosanitary -Biotechnology intensification in 2008. This year, I followed a Master course in BioScience. After that Master I decided to start a PhD applying for a National grant. I started the JAE-PreDoc grant from the Spanish Government at the CEBAS-CSIC (The Spanish Research Council) in the Research Group on Quality, Safety and Bioactivity of Plant Foods, in the Food Science and Technology Department in September of 2011. This year, I also started my second Master in Molecular biology and Biotechnology, which I have just finished. Therefore, since 2011 I have been combining the experimental work of my PhD with the Master course.
The research line of my PhD, is the Risk Evaluation of Pre and Postharvest Practices in Leafy Greens. The first step has been to determine the prevalence of foodborne pathogens (e.g. *E. coli O157:H7*, *Listeria monocytogenes* and *Salmonela spp*.) in the fresh produce chain of leafy greens, from the field to trade. Therefore, up to now, my work has been focus on a systematic sampling, evaluating the microbial safety of leafy greens at primary production, fresh-cut processing plants and distribution. The second part of this PhD will be focus on determining the impact of specific agricultural and processing practices on the survival/growth of foodborne pathogens, such as *E. coli* and *Salmonella*. Within this topic, we have started to evaluate the impact of different intervention strategies on the biofilm formation of foodborne pathogens, using very simple techniques such as the crystal violet method. Therefore, the knowledge that this course will provide me about novel and more sophisticated techniques to determine the biofilm formation in vegetable tissue will be very relevant for the second part of my PhD. In fact, this knowledge would help not only the research line involved in my PhD, but also it will represent a very powerful tool in my research group, as it will let us to develop new and improved interventions strategies to inhibit survival of foodborne pathogens.

Title of presentation:
Risk Evaluation of Agricultural and Production Practices in Leafy Greens.

Jörg Hummerjohann
joerg.hummerjohann@agroscope.admin.ch
Federal Department of Economic Affairs
Agroscope Liebefeld-Posieux Research
Station
Schwarzenburgstrasse 161
CH-3003 Bern
Switzerland

I studied Biology at University of Bayreuth in Germany. 1994, I moved to Switzerland for PhD thesis work on stress response in *P. aeruginosa* at the Swiss Federal Institute of Technology in Zürich. After a postdoc and a first job in a private diagnostics lab, I joined "Agroscope", the research station belonging to the Federal Office for Agriculture, which is located at 6 different sites of Switzerland. At our site in Liebefeld near Berne we are conducting applied research on milk and milk products. As the head of "Bacteriological Food Safety", I'm responsible for an accredited food diagnostics lab and for a research lab.
We recently discovered the appearance of heat-resistant subtypes of *E. coli* in our dairy industry and this phenotype seems to be linked with biofilm formation. In addition, a special subtype of *S. aureus*, characterized by a scientist of my group, belongs to a clonal cluster known for its biofilm formation capacities. Now, it's a "must" for us to start conducting research activities in the field of biofilms and persistence. Therefore, I recently joined COST Action FA-1202 (MC and "stress response" subgroup) to perform and coordinate research activities on persistent strains relevant for the Swiss food sector.

Title of presentation:
Subtypes of *E. coli* and *S. aureus*: Involvement of biofilms?

Julia Jacob

jjacob@atb-potsdam.de
Leibniz Institute for Agricultural
Engineering Potsdam-Bornim
Quality and Safety of Food and Feed
Department of Horticultural Engineering
Max-Eyth-Allee 100
14469 Potsdam - Germany

After finishing my study of food technology at University of Technology in Berlin, I started my research work as a PhD student at Leibniz Institute for Agricultural Engineering Potsdam-Bornim. My research topic is the detection and characterization of microorganisms on food surfaces. Especially, the specific detection of foodborne pathogens using FISH in combination with flow cytometry and the determination of physiological properties of microorganisms by flow cytometry is the main focus of my work. This workshop offers the possibility to improve my skills in biofilm techniques.

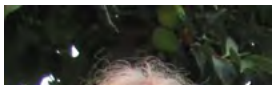
Title of presentation:
Characterization and monitoring of microorganisms by online detection methods

Martina Bohacova
bohacovm@vscht.cz
Faculty of Food and Biochemical
Technology
Institute of Chemical Technology
Prague (ICT Prague)
Technicka 5
Prague 6 - 166 28
Czech Republic

I have graduated in Biology at Palacky University in Olomouc and in Biological Sciences at University of the West of England in Bristol. Currently, I am master degree student in Microbiology at Institute of Chemical Technology. I am interested in biofilms and antimicrobial resistance. My project is focused on biofilm composition of *Listeria monocytogenes.*
I would like to participate at this course to get familiar with different biofilm study techniques and methodologies. I would like to get new insights on biofilms in food industry and hygiene.

Tite of presentation:
Determination of *Listeria monocytogenes* biofilm composition.

Pavel Novy
novy@pef.czu.cz

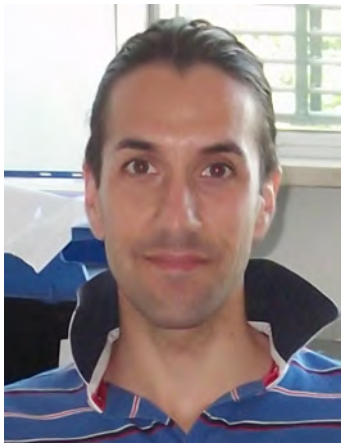


Czech University of Life Sciences Prague
Faculty of Agrobiology, Food and Natural Resources
Department of Quality of Agriculture Products
Kamycka 129
Prague 6 – Suchdol, 16521
Czech Republic

I have recently finished my PhD studies whereas my research was focused on the antimicrobial activity of plant-derived compounds and their interactions with conventional antibiotics against *Staphylococcus aureus.* My current position at the Department of Quality of Agriculture Products forces me to redirect my research to food sector, therefore I have decided to start with testing bacterial biofilms. Currently I am running my first attempts to perform microdilution assay with CV and MTT staining to determinate quorum quenching and antibiofilm activity of plant derived compounds. I expect that during the workshop I will have the opportunity to discuss this issue with researchers experienced in this field. Moreover, I suppose to see or perhaps also to practice other technics used for biofilm testing. I want to consider what other methods (besides the microdilution) I would be able to perform at my home institution with the equipment available.

Title of presentation:
Synergy as a strategy for overcoming bacterial resistance

Pierluigi Aldo Di Ciccio
pierluigialdo.diciccio@nemo.unipr.it
Department of Food Science
University of Parma
Via del Taglio n.10
43126 Parma
ITALY

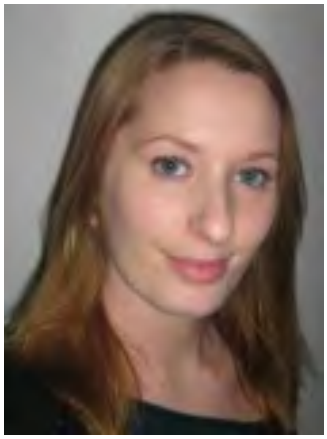


I had a degree in Veterinary Medicine (110/110 cum laude) on 20th July 2005. I had the PhD in Food Quality and Safety at University of Parma on 17th April 2012. I am a specialist in inspection of food of animal origin. I was a visiting scientist in the microbiology laboratory at the Center for Meat Safety & Quality in the Department of Animal Sciences of Colorado State University, USA. During that internship at Colorado State University, I have conducted a research project on survival of *Salmonella* spp. on packaging materials. Having worked for the last four years for the Unit of Food Safety, University of Parma, I have matured a good experience in the study of the main food-borne pathogens such as *Listeria monocytogenes, Staphylococcus aureus, MRSA* strains and *Salmonella* spp. My research activities are

related to evaluation of microbial biofilms, virulence factors, and the antibiotic resistance properties of bacteria. In particular, I have studied the virulence properties of *Listeria monocytogenes* strains isolated from food and food-environments and the biofilm formation ability of *Listeria monocytogenes* strains on different food contact surfaces with regard to different temperatures. During the PhD course, I have studied the antimicrobial action of ozone gas and its effect on biofilm-forming ability by *Staphylococcus aureus* and *Listeria monocytogenes* strains. Finally, during the last years, I was involved in several national and EU research projects that were running in the laboratory (ex. Projects that were funded by the italian Ministry of Health and the Italian Ministry of Education, University and Research and EU projects within 6 in the 5th Framework Programme etc…). I have published n.6 papers as author or co-author on the field of microbial biofilms. I think that the training school on biofilm techniques will be a great chance to improve my professional experience on new approaches and methodologies to analyze microbial biofilms. In addition, this training school is a good opportunity to facilitate knowledge transfer in this field between laboratories in EU.

Title for presentation:
Survival and biofilm formation of *Listeria monocytogenes* strains.

Sara Rød
sararod@life.ku.dk
University of Copenhagen
Faculty of Science
Department of Food Science
Rolighedsvej 30
1958 Frederiksberg C
Denmark



I am currently investigating the attachment and uptake of *Salmonella* in Arabidopsis seedlings as well as the survival following surface decontamination. In this regard an enhanced knowledge concerning biofilm would help my understanding of the latter and hopefully lay ground for new ideas for this part of my project.

Title of presentation:
Food-borne pathogenic bacteria in plants: Uptake, survival and decontamination

Simone Nübling
Simone.nuebling@uni-hohenheim.de

Department of Food Microbiology 150A
Institute of Food Science and
Biotechnology
University of Hohenheim
Garbenstrasse 28
70599 Stuttgart
Germany

I am currently a Ph.D. student at the Department of Food Microbiology at the University of Hohenheim in the working group of Prof. Dr. Herbert Schmidt.

Before studying, I was employed as a laboratory assistant at the "Chemical and Veterinary Investigation Office" in Freiburg (Germany). My work included molecular biological analysis, Identification and detection of genetically modified organism and microbial analysis in drinking water. Since this time I am greatly interested in microbiology.

Therefore, I started my bachelor of sciences studies in Food Science and Biotechnology at the University of Hohenheim in 2007. In order to enhance my knowledge in microbiological issues, I attended all microbiological courses. Furthermore I chose to write my bachelor-thesis entitled "Identification and characterization of *Bacillus cereus* isolates from risk foods" at the Department of Food Microbiology.

After that I completed my master of science in Food Science and Engineering successfully. In my master thesis entitled "Functional characterization of the protein 933Wp42 in bacteriophage 933W of *Escherichia coli* O157:H7 strain EDL933" I constructed *E. coli* mutants expressing a particular phage-encoded protein, purified this protein and characterized its functionality.

In December 2012, I started my Ph.D. thesis in a government-financed project entitled "Analysis of microbial biodiversity on ready-to-eat lettuce as a method for monitoring innovative washing processes". I am strongly interested in the mechanisms of integration of bacterial pathogens such as enterohemorrhagic *E. coli* in biofilms on plant surfaces. Therefore, participation in this course fits strongly in my research interests and is important for the development of the research projects in my Department.

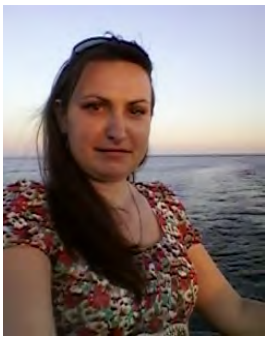
Title of presentation:
Analysis of the microbial biodiversity on ready-to-eat lettuce as a method for monitoring innovative washing processes

Sinem MALKOÇ
sinem.malkoc@tubitak.gov.tr

TUBİTAK MAM BARIŞ MAH. DR. ZEKİ ACAR
CAD. NO:1
GEBZE/KOCAELİ
Turkey

I have a graduate degree in Food Engineering in 2009 and MBA Degree in 2013. I am a researcher at TÜBİTAK MRC Food Institute. At the same time I am doing my MS in food science in laboratory from 2012. I am engaged with imaging biological samples using environmental scanning electron microscopy (ESEM) and carrying out research on the disinfection of fresh-cut leafy vegetables and biofilm formation by major foodborne pathogens on green leaf vegetables, more specifically on iceberg lettuce.

Title of presentation:
Biofilm formation by major foodborne pathogens on green leaf vegetables.



Viktoriia Bati
v.bati@mail.ru
Department of Microbiology, Virology,
Immunology with the course of Infectious
Diseases
Laboratory of Molecular Microbiology and
Mucosal Immunology
Faculty of Medicine
Uzhhorod National University
1, Narodna Sq.
Uzhhorod, 88000
Transcarpathian Region
Ukraine

I was graduated in National University “Lviv Polytechnic”, Institute of Chemistry and Chemical Technology, Department of Engineering, biologically active compounds, pharmaceutical and biotechnology, Master Diploma, qualification of chemical engineer in “Biotechnology of biologically active substances”. My master thesis was entitled “Biosynthesis continuous culture *Saccharomyces cerevisiae*”.

Industrial experience

I began my carrier from lab technician to the engineer and Chief in the Laboratory of chemical and bacteriological analysis of the joint stock company “Uzhhorodmoloko” (Uzhhorod), Limited liability company “Konservis-Trade” (Chaslovtsy village, Uzhhorod district) Limited Liability Dairy Company "Nastunya" and I was working also on position of Head of Chemical and toxicological department of the Regional State Veterinary Laboratory in the Transcarpathian region.

Main activities I had been involved in industry/state certifying authorities:

1. Studies’ monitoring, data validation, researches’ development, operation of the quality system documentation,
2. Work with the modern equipment: Microwave mineralizing “MILISTOUN Ethnos D” (for preparation of samples) and atomic absorption spectrophotometer “SOLAAR AA”.

3. Advanced training in the Research Institute for laboratory diagnostics and veterinary-sanitary examination, by mycology and familiarization with the work on mineralizing type, as “MILISTOUN Ethnos D” and “BERGHOF” and also training on an atomic absorption spectrophotometer “SOLAAR AA”.
4. Development of the product flow charts.
5. Development and maintenance of technical documentation (all-Union State Standard, Ukrainian national standardization system, standard specifications).
6. Introduction into production the new dairy products.
7. Control of production processes and certification of dairy products.
8. Experimental researches and establishment of new starters, products’ taste improvement,
9. Implementation of the modern technologies, yeasts, rennet for introduction of new types of dairy products in collaboration with the production company “CHR.HANSEN”.
10. Improving the quality and taste, prolongation the expiration date of dairy products without usage of stabilizers.
11. Development using innovative technology of the new product - Brine cheese "feta", based on whole milk cream in cooperation with the company «CARDSYSTEMS».

My scientific carrier was started in November 2011, on position of Junior Research Fellow at the Department of Microbiology, Virology, Immunology with Courses of Infectious Diseases, Medical Faculty, Uzhhorod National University, then Research Fellow at the FP7 project BaSeFood; “Bioactive components in foods traditional food”, Grant Agreement: 227118. (http://www.basefood-fp7.eu/). I had attended training course "Compositional Database: a computer program DARIS." Organizer: Slovak Database of the food (SFDB), Research Institute for Food. Courses held at the Faculty of Medicine UzhNU.

Main current activity and expertise are as follows

1. Safety of plant originated food during the food processing chain.
2. Experiments *in vitro* and *in vivo* studying pro-and anti-bacterial properties of about 100 plant extracts rich in biologically active compounds (polyphenols) on 40 test cultures of microorganisms (representatives of commensal gut microbiota, agents of opportunistic infections and strong food-borne pathogens).
3. Regional (traditional) food composition data base, documentation, LanguaL, DARIS.
4. Novel functional foods, technological aspects, and health claims: preclinical study.

In 2012 have entered a PhD at the Department of Microbiology, Virology, Immunology with Courses of Infectious Diseases, Medical Faculty, Uzhhorod National University. Title of the PhD work: “Microbial isolates of plant-based traditional fermented foods in the production of novel functional foods”.
Since I’m “industrially oriented” person I’m looking forward to establish cooperation

with teams working in relevant field in order to promote our newly developed products into European market. The traditional fermented products and plant based foods are unique source of biological active compounds and beneficial microorganisms. But in the same time it can be contaminated of potentially pathogenic bacteria with are currently spread in environment and are the agents of opportunistic infections. The interaction between plans/microorganisms and the quality/safety plant originated foods issues are mainly defined by ability of microorganisms to attach to plant/food surface, and create biofilms, also during storage and packing. To know the all modern techniques are necessary to be effective in protection of foods against spoilage microorganisms, and food borne pathogens. Since my experience in this field is really very limited, I used a chance and the opportunity to attend the course. Another motivation is to meet excellent scientific team and be a partner of such a great international network.

General information of our team:

Laboratory of Molecular Microbiology and Mucosal Immunology, Faculty of Medicine of Uzhhorod National University, Uzhhorod, Ukraine has conducted a number of various research works including those which require skills in the field of molecular microbiology and immunology (cell cultures, cultivation of tissues fragments, etc.). In particular we have recently investigated pro- and antibacterial properties of more than 100 edible plant extracts rich in biologically active substances (e.g., anthocyanins and polyphenols) towards 40 test-cultures of microorganisms (species of commensal gut microbiota representatives as well as causative agents of opportunistic infections and strong pathogens) using our *in vitro* and *in vivo* models. This work was done during the implementation of FP7 “BaSeFood” project (No of grant agreement 227118).

In 2009-2012 investigation of molecular-cellular mechanisms of influence on human health not only representatives of commensal microbiota but also a variety of diet antigens of plant origin has become a new and promising direction of our research work. We have selected prebiotic-likes compounds as potential components of newly developed targeted diets (specific functional foods) and as valuable food additives in complex biological preparations (synbiotics) which will be consequently implemented to food industry, medicine and veterinary practice.

Title for presentation:

Traditional fermented foods of plant origin as new source of novel functional foods

Yu Zhao
yuzhao@life.ku.dk

Faculty of Science
Department of Food Science
Food Microbiology
University of Copenhagen
Rolighedsvej 30
DK-1958 Frederiksberg C
Denmark
Education background
Ph.D., University of Copenhagen, Food Microbiology, 10/2012-
M.Sc., China Agricultural University, Food Biotechnology, 09/2010-06/2012

I am interested in this course because my PhD project involves biofilm. The aim of this project is to investigate two important parameters in spoilage of beer. The first is biofilm formation of spoilage bacteria (Lactic acid bacteria) in the production environment, and the second is the ability to withstand traditional cleaning and sanitation procedures.

Title of presentation:
Investigation of the physiology and persistence of beer spoilage lactic acid bacteria in beers and breweries